

KOTA, J.

Hungarian Technical Abst.
Vol. 5 No. 4 1953

17. The importance of time factors in blasting --
Idő tényezők szerepe a robbantó haldoban -- J. Kóta (Hungarian Journal of Mining -- *Bányászati Lapok* -- Vol. 7(15), 1952, No. 10, pp. 507-521, 18 figs., 3 tabs.)

In the course of experiments conducted for the purpose of perfecting blasthole stemming it appeared that blasting time calculated on the basis of the speed of detonation is not identical with the period of complete chemical transformation. In some cases this was indicated by the appearance of dense smoke. Energy release and blow-off time as well as the connection of these factors to "millisecond blasting" were investigated by means of stress factors. The interference tests aiming to decrease rock vibration by "millisecond blasting" resulted in a more favourable cushioning effect and in a better preservation of roof and walls.

P. Maszalan

KOTA, Lajos, okleveles bányagepészmernok; SCHUMICKY, Imre, okleveles
gepészmernok

An account of the Freiburg international meeting on "Dry
dressing and water." Bányalap 97 no.11:773-774 N '64.

1. Mining Designing Institute, Budapest.

KOT, Z.

Attempted registration of active currents in insects and in spiders
by electrographic methods. Przegl. lek., Krakow 9 no.3:94-96 1953.
(GIML 24:5)

1. Of the Third Internal Clinic (Head--Prof. J. Aleksandrowicz, M.D.)
of Krakow Medical Academy.

TERENT'YEV, Yu.A., inzh.; POPOV, V.D., doktor tekhn. nauk;
KOT, Yu.D., kand. tekhn. nauk; YASINSKAYA, T.V., inzh.

Rheological properties of sugar massecuite. Pishch. prom.
no.1:38-46 '65. (MIRA 18:11)

KOT, Yu.D.

Optimum temperature conditions in the diffusion process. Sakh.
prom. 37 no.3:24-26 Mr '63. (MIRA 16:4)

1. Tsentral'nyy nauchno-issledovatel'skiy institut sakharney
promyshlennosti.

(Sugar manufacture)

KOT, Yu.D.; SOKOLOVA, A.L.

Evaporation and crystallization of massecuite from the second boiling product. Sakh.prom. 36 no.11:7-11 N '62. (MIRA 17:2)

1. Tsentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti.

KOT, Yu.D.

Mixing of massecuites. Sakh.prom. 35 no.4:34-37 Ap '61.

1. Tsentral'nyy nauchno-issledovatel'skiy institut sakharnoy
promyshlennosti. (MIRA 14:3)

(Sugar manufacture)

KOT, Yu.D.

Nomograms for the centrifugation of the magsecuities of the second
(last) product. Sakh. prom. 35 no.2:16-21 # '61. (MIRA 14:3)

1. TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy
promyshlennosti.
(Sugar manufacture)

KOT, Yu.D.

Measures for increasing the production capacity of sugar factories.
Sakh.prom. 33 no.12:10-14 D '59. (MIRA 13:4)

1. ~~TS~~entral'nyy nauchno-issledovatel'skiy institut sakharney promy-
shlennosti.

(Kuban--Sugar industry)

VAYSMAN, M.L.;BURYAKOV, N.I.;KOT, Yu.D.

TSINS system periodic action vacuum pan with sectional heating surface. Sakh. prom. 33 no.11:33-36 N '59 (MIRA 13:3)

1. Tsentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti (TsINS).
(Sugar machinery) (Evaporating appliances)

KOZHUSHKO, A.T.; KOT, Yu.D.

Intensifying the crystallization of the second product by
air ventilation. Sakh.prom. 33 no.9:26-31 8 '59.
(MIRA 13:1)

1. Tsentral'nyy nauchno-issledovatel'skiy institut sakharnoy
promyshlennosti.
(Sugar manufacture)

KOT, Yu.D.

Centrifuging of massecuites. Sakh. prom. 33 no.5:14-18 My '59.
(MIRA 12:7)

1. Tsentral'naya normativno-issledovatel'skaya stantsiya.
(Sugar manufacture)

KOT, Yu. D.: Master Tech Sci (diss) -- "Investigation of the process of refining sugar". Kiev, 1959. 20 pp (Min Higher Educ Ukr SSR, Kiev Tech Inst of the Food Industry), 150 copies (KL, No 18, 1959, 125)

Kot Ya. D.
ZELIKMAN, I.F.; KOT, Ya.D.

Boiling masscuits from high-concentration sirup. Sakh. prom. 32
no.3:12-17 Nr '58. (MIRA 11:4)

1. Sredneasiatskiy politekhnicheskiy institut (for Zelikman).
2. Tsentral'nyy nauchno-issledovatel'skiy institut sakharnoy
promyshlennosti (for Kot).
(Sugar manufacture)

KOT, Yu.D.
KOT, Yu.D.

Optimum conditions for affination of raw sugar. Sakh. prom. 32 no.1:
18-25 '58. (MIRA 11:2)

1. Tsentral'nyy nauchno-issledovatel'skiy institut sakharney pro-
myshlennosti.

(Sugar manufacture)

KOT Yu D.

KOT, Yu.D.

Affining raw sugar with unheated green syrup. Sakh. prom. 31 no.10:
57-60 0 '57. (MIRA 11:1)

1. Tsentral'nyy nauchno-issledovatel'skiy institut sakharney pro-
myshlennosti.

(Sugar industry)

KOT, Yu.D.

Production of concentrated sirups in evaporator sections. Sakh.prom.
30 no.6:19-20 Je '56. (MIRA 9:9)

1.2 Kubanskiy sakhkombinat.
(Sugar industry)

KOT, Yu.D.

Flushing out a three-tank evaporation system under pressure while in operation. Sakh.prom, 27 no.8:29-31 Ag '53. (MLRA 6:8)

1. 2 Kubanskiy sakharney zavod. (Evaporating appliances)

CA

2P

The use of condensation water in a sugar refinery
V. D. Kot. *Sakharnaya Prom.* 29, No. 11, 31-2 (1951).
Hard water in a sugar refinery causes increased losses of
sucrose in the final molasses. Condensation water is pref-
erable to water treated with ion exchangers. V. E. B.

HUNGARY

FOIA, Volodaf, Dr: Hospital of the Workers' Party Council, Medical Ward
(Kormendo Garasi Tanacs Kormand, Budapest)

"Acute Myocardial Infarct with Early Septum Perforation."

Godapost, Gyozsi, Budapest, Vol 109, No 1, 1964, pp. 204-210.

^{Hungarian}
Abstract: [Author's preliminary modified] The author describes an inter-
ventricular septum perforation that occurred about three hours after the
myocardial infarct. Early pericarditis developed. The right branch of the
coronary artery was stressed. Autopsy confirmed the clinical diagnosis.
[4 Hungarian references]

TH

KOT, V.V., zasluzhennyy agronom RSFSR

Sunflower as a crop preceding winter wheat. Zemledelie 26 no.8:
14-17 Ag '64. (MIRA 17:11)

1. Vsesoyuznyy ordena Trudovogo Krasnogo Znameni nauchno-issle-
dovatel'skiy institut maslichnykh i efiromaslichnykh kul'tur.

KOT, V.I., gornyy inzh., LOMONOS, G.K., gornyy inzh.; NESTERCHUK, G.M.,
gornyy inzh.

Indicators of the level and the consumption of liquids. Gor.
zhur. no. 12:55-58 D '65. (MIRA 18:12)

1. Institut Avtomatizatsionnoy Tekhnologii, gorod Konotop.

KOT, V.I., inzh.; LYASHENKO, E.I., inzh.

Two completely reversible electric-hydraulic drive used in the automation of industrial production processes. Mashinostroenie no.4:32-34 JI-Ag '65. (MIRA 18:8)

MARKOV, D.A.; KOT, V.I.; KOSHKINA, N.I.

Rossolimo's "reversed" reflex. Dokl. AN BSSR 7 no.6:425-
427 Je '63. (MIRA 16:10)

1. Belorusskiy nauchno-issledovatel'skiy institut nevrologii,
neyrokhirurgii i fizioterapii i klinika ~~nervnykh~~ **bolezney**
Belorusskogo gosudarstvennogo instituta usovershenstvovaniya
vrachey.

KOT, V.I.

Plastic articles manufactured at the "Krasnyi Metallist" Plant
in Konotop. Mashinostroitel' no.5:22-23 My '62. (MIRA 15:5)
(Konotop--Plastics industry)

KOT, V.I., inzh.; MARGOLIN, L.Ya., inzh.

Modernizing the automatic control systems of mine ventilation units.
Ugol' 36" no.4:28-30 Ap '61. (MIRA 14:5)

1. Zavod "Krasnyy metallist". (Automatic control)
(Mine ventilation)

KOT, V. I.

99-58-6-4/11

AUTHOR: Kot, V.I., Engineer

TITLE: To the Problem of Planning Land Irrigation (K voprosu o planirovke oroshayemykh zemel')

PERIODICAL: Gidrotekhnika i Melioratsiya, 1958, Nr 6, pp 28-32 (USSR)

ABSTRACT: In this article the author describes in detail well-known profile leveling and surveying operations carried out in the USSR. Scrapers and bulldozers may be used for making proper cuts and fills for guaranteeing more economical irrigation-al methods. These operations are planned by squares and stripes. There are 7 figures.

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Card 1/1

1. Irrigation systems-Construction Applications
2. Earth moving machines-

KOT, Rudolf

Universal press tools for small-lot production. Stroj vyr 11 no.3:
158-159 Mr '63.

1. Zavodni pobočka Československé vědecko-technické společnosti,
Zavody přesného strojírenství, n.p., Gottwaldov.

KOT, N.A., inzh.

Some problems in the performance of the screw type cutter as
excavating element. Torf. prom. 39 no.6:7-8 '62. (MIRA 1647)

1. Institut torfa AN Belorusskoy SSR.
(Peat machinery)

KOT, N.A., inzh.

Effect of the helix lead of the miller on the power needed for the
milling of a peat deposit. Tort.prom. 40 no. 246-47 '63.
(PAPA 17:3)

1. Institut torfa AN BSSR.

KOT, N.A. [Kot, M.A.]

Investigating the operation of a worm hob as an excavating
tool under field conditions. Vestsi AN BSSR. Ser. fiz.-tekh.
nav. no.3:122-126 '62. (MIRA 18:3)

DORZHINKEVICH, I.B.; KOT, N.A.; VLASENKO, Yu.Ya.

New standard underground service storage of explosives. Met.
1 gornorud. prom. no.6:58-60 N-D '65. (MIRA 18:12)

L 09226-67

ACC NR: AR6019912

in conductivity indicate that the sorbate oxygen forms surface levels which are electron traps in the n-type layers, and which play the role of acceptors in the p-type layers. Dependence of electrical properties on thickness in layers with great electron mobility (InSB, HgSe, HgTe) is discussed. I. V. [Translation of abstract]

SUB CODE: 20, 07

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L 09226-67 EMT(1)/EMT(m)/EMP(t)/ETI IJP(c) JD/JG

ACC NR: AR6019912

SOURCE CODE: UR/0275/66/000/002/B009, 9009

AUTHOR: Kot, M. V.; Kas'yan, V. A.; Maronchuk, Yu. Ye.

TITLE: Dependence of electrical properties of thin layers of certain binary compounds on thickness and on the surrounding atmosphere

SOURCE: Ref.zh. Elektronika i yeye primeneniye, Abs. 2B71

REF SOURCE: Sb. Poverkhnostn. i kontaktn. yavleniya v poluprovodnikakh. Tomsk, Tomskikh un-t, 1964, 432-445

TOPIC TAGS: electric conductivity, Hall coefficient, thermal electromotive force, binary alloy, vacuum chamber, sorption, electron trapping, electron mobility

ABSTRACT: The dependence of conductivity, the Hall coefficient, and the differential thermal electromotive force on the thickness of a polycrystalline layer of binary compounds was investigated. An increase in conductivity with increase in thickness up to 0.5 to 0.8 micron was observed in n-type compounds. p-type conductivity in CdTe fell sharply with an increase in film thickness to 0.6 micron, and then remained virtually unchanged. Letting air or oxygen into a vacuum chamber immediately after the layers are obtained results in a reduction in conductivity for n-type films, and to an increase for p-type films. The surrounding atmosphere also had its effect on the differential thermal electromotive force. The reverse changes

Card 1/2

UDC: 539.293:541.412

1. INTRODUCTION

2. DESCRIPTION OF THE DEVICE

The device is a vacuum tube amplifier with an internal electron beam. The electron beam is generated by a cathode and is accelerated by a series of electrodes. The beam is then deflected by a magnetic field and is focused onto a target. The target is a piece of material that is being studied. The device is used to study the properties of the target material. The results of the study are presented in the following sections.

3. RESULTS OF THE STUDY (Kirkland State University)

4. CONCLUSIONS

5. REFERENCES

6. APPENDIX

7. INDEX

8. GLOSSARY

9. FIGURES

[illegible]

1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308</
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770. On the influence of the intensity of the self-interaction on the

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1. 2. 3. 4. 5.

AGENCY OF THE ARMY

...the radiation ... and the width of the band ... boundary toward shorter wave- ... determined from the position of ... corresponding to the width of ... It is thus concluded ... radiation. The intensity of ... larger than ... up to ... exceeds 1 A/cm ... the radiation ... parallel to the plane of the ... at 20 and 50 ... in the ...

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1997年 第 2 期

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AUTHORS: KIMURA, Y., NISHIKAWA, M., OKAMOTO, T., AND TSUBAKI, S.

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DATE: 11/11/2015 TIME: 11:13 AM

1. 1990-1991 1991-1992 1992-1993 1993-1994 1994-1995 1995-1996 1996-1997 1997-1998 1998-1999 1999-2000 2000-2001 2001-2002 2002-2003 2003-2004 2004-2005 2005-2006 2006-2007 2007-2008 2008-2009 2009-2010 2010-2011 2011-2012 2012-2013 2013-2014 2014-2015 2015-2016 2016-2017 2017-2018 2018-2019 2019-2020 2020-2021 2021-2022 2022-2023 2023-2024 2024-2025 2025-2026 2026-2027 2027-2028 2028-2029 2029-2030 2030-2031 2031-2032 2032-2033 2033-2034 2034-2035 2035-2036 2036-2037 2037-2038 2038-2039 2039-2040 2040-2041 2041-2042 2042-2043 2043-2044 2044-2045 2045-2046 2046-2047 2047-2048 2048-2049 2049-2050 2050-2051 2051-2052 2052-2053 2053-2054 2054-2055 2055-2056 2056-2057 2057-2058 2058-2059 2059-2060 2060-2061 2061-2062 2062-2063 2063-2064 2064-2065 2065-2066 2066-2067 2067-2068 2068-2069 2069-2070 2070-2071 2071-2072 2072-2073 2073-2074 2074-2075 2075-2076 2076-2077 2077-2078 2078-2079 2079-2080 2080-2081 2081-2082 2082-2083 2083-2084 2084-2085 2085-2086 2086-2087 2087-2088 2088-2089 2089-2090 2090-2091 2091-2092 2092-2093 2093-2094 2094-2095 2095-2096 2096-2097 2097-2098 2098-2099 2099-2100 2100-2101 2101-2102 2102-2103 2103-2104 2104-2105 2105-2106 2106-2107 2107-2108 2108-2109 2109-2110 2110-2111 2111-2112 2112-2113 2113-2114 2114-2115 2115-2116 2116-2117 2117-2118 2118-2119 2119-2120 2120-2121 2121-2122 2122-2123 2123-2124 2124-2125 2125-2126 2126-2127 2127-2128 2128-2129 2129-2130 2130-2131 2131-2132 2132-2133 2133-2134 2134-2135 2135-2136 2136-2137 2137-2138 2138-2139 2139-2140 2140-2141 2141-2142 2142-2143 2143-2144 2144-2145 2145-2146 2146-2147 2147-2148 2148-2149 2149-2150 2150-2151 2151-2152 2152-2153 2153-2154 2154-2155 2155-2156 2156-2157 2157-2158 2158-2159 2159-2160 2160-2161 2161-2162 2162-2163 2163-2164 2164-2165 2165-2166 2166-2167 2167-2168 2168-2169 2169-2170 2170-2171 2171-2172 2172-2173 2173-2174 2174-2175 2175-2176 2176-2177 2177-2178 2178-2179 2179-2180 2180-2181 2181-2182 2182-2183 2183-2184 2184-2185 2185-2186 2186-2187 2187-2188 2188-2189 2189-2190 2190-2191 2191-2192 2192-2193 2193-2194 2194-2195 2195-2196 2196-2197 2197-2198 2198-2199 2199-2200 2200-2201 2201-2202 2202-2203 2203-2204 2204-2205 2205-2206 2206-2207 2207-2208 2208-2209 2209-2210 2210-2211 2211-2212 2212-2213 2213-2214 2214-2215 2215-2216 2216-2217 2217-2218 2218-2219 2219-2220 2220-2221 2221-2222 2222-2223 2223-2224 2224-2225 2225-2226 2226-2227 2227-2228 2228-2229 2229-2230 2230-2

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ACCESSION NR: AP4041380

8/0048/64/028/006/1073/1076

AUTHOR: Danilyuk, S.A.; Kot, M.V.

TITLE: Structure and electric properties of the HgTe-ZnTe system [Report, Third Conference on Semiconductor Compounds held in Kishinev 16 to 21 Sep 1963]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.6, 1964, 1073-1076

TOPIC TAGS: semiconductor property, thin film, electric conductivity, light absorption, IR absorption, mercury telluride, zinc telluride

ABSTRACT: Polycrystalline specimens and thin films (1 to 6 microns) of HgTe-ZnTe solid solutions were prepared and some of their properties were determined. The bulk materials were prepared by heating the elements in quartz ampules with vibration. Solid solutions with the sphalerite structure were obtained at all compositions. The lattice constant varied linearly with composition. The materials obtained in this way were porous, and their electric properties were not examined. The films were deposited on heated glass or mica by vaporizing the binary compounds. Single phase portions of the films were located by electron diffraction. The films had the same structure and lattice constants as the bulk materials of like composition.

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ACCESSION NR: AP4041379

ASSOCIATION: Kishinevskiy gosudarstvennyy universitet (Kishinov State University)

SUBMITTED: 00

ENCL: 00

SUB CODE: SS, IC

NR REF SCW: 001

OTHER: 001

Card 3/3

ACCESSION NR: AP4041379

fraction showed to be solid solutions. The material could be obtained with a crystal structure of the sphalerite type at all compositions or, by altering the synthesis conditions, it could be obtained with the wurtzite structure for $x > 0.5$. Only the sphalerite type materials were investigated. The lattice constant was measured at room temperature, and the conductivity and the Hall coefficient were measured at temperatures up to about 600°K. All the materials were n-type conductors. The lattice constant decreased monotonically but not linearly with composition from 6.07 Å at $x = 0$ to 6.04 Å at $x = 1$. The resistivity at room temperature increased smoothly from 1.25×10^{-3} ohm cm at $x = 0$ to 1.4×10^6 ohm cm at $x = 1$. The Hall coefficient at room temperature increased from $9 \text{ cm}^3/\text{coulomb}$ at $x = 0$ to $10^3 \text{ cm}^3/\text{coulomb}$ at $x = 0.7$. The Hall coefficient was nearly independent of temperature for $x < 0.3$ and decreased with increasing temperature for materials with greater cadmium content. Intrinsic conductivity was not manifested in the temperature range investigated by materials with $x < 0.3$. The materials with greater cadmium content showed an activation energy for conduction which rose from about 0.2 eV at $x = 0.3$ to 1.68 eV at $x = 1$. "In conclusion, the authors consider it their duty to thank V.A.Kprotov for participating in the work." Orig.art.has: 6 figures.

Card2/3

ACCESSION NR: AP4041379

S/0048/64/028/006/1069/1072

AUTHOR: Kot, M.V.; Mshenskiy, V.A.

TITLE: Structure and electric properties of the cadmium selenide-mercury selenide system Report, Third Conference on Semiconductor Compounds held in Kishinev 16 to 21 Sep 1963

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.6, 1964, 1069-1072.

TOPIC TAGS: semiconductor property, solid solution, cadmium selenide, mercury selenide, Hall coefficient, electric resistivity

ABSTRACT: This paper reports a continuation of earlier work on the properties of solid solutions of the composition $(\text{CdSe})_x(\text{HgSe})_{1-x}$ (M.V.Kot, V.G.Tyrziu, A.V.Sima-shkovich, Yu.Ye.Maronchuk, V.A.Mshenskiy, Fiz.tverdogo tela 4, 1536, 1962). The earlier work was concerned with thin films; investigations of the bulk materials are reported in the present paper. The materials for investigation were obtained by heating spectroscopically pure Se, Cd and Hg with vibration at a temperature between 800 and 1300°C. The ingots thus obtained were annealed for 100 to 200 hours. The final specimens were large grained homogeneous polycrystalline materials that x-ray dif-

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ACCESSION NR: AP4041378

V.A.Mshenskiy, Fiz.tverdogo tela 4,1536,1962). The conductivity at room temperature varied monotonically with composition. The thin films containing less than 65% HgSe were considerably more conductive than the corresponding bulk materials; for materials containing more than 65% HgSe the opposite was true. The conductivities were measured at temperatures from 20 to about 300°C. The temperature dependence of the conductivity of the films was similar to that of the bulk materials. The conductivity of materials containing more than 60% HgSe decreased slightly with increasing temperature; that of materials containing less than 60% HgSe increased with temperature; the conductivity of the solution containing 60% HgSe passed through a minimum at 200°C. The activation energies obtained from the conductivity measurements varied monotonically with composition from 2.55 eV for ZnSe to 0.48 eV for the material containing 60% HgSe. These activation energies (except for ZnSe) are considerably lower than those obtained by the authors et al. (loc.sit.supra) by optical means. The observed conductivity was accordingly not intrinsic. Hall constants were measured at room temperature for some of the more conductive specimens. The conduction electron concentration varied between 2×10^{17} and 3×10^{18} cm⁻³ and the mobilities were of the order of 10⁴ cm²/V sec for the bulk materials and 10³ cm²/V sec for the films. "In conclusion, the authors consider it their duty to express their gratitude to M.M.Marius of the Institute of Physics and Mathematics of the Academy of

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Card 3/3

ACCESSION NR: AP4041378

S/0048/64/028/006/1065/1068

AUTHOR: Kot, M.V.; Simashkevich, A.V.

TITLE: Structure and electric properties of the ZnSe-HgSe system [Report, Third Conference on Semiconductor Compounds held in Kishinev 16 to 21 Sep 1963]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.6, 1964, 1065-1068

TOPIC TAGS: semiconductor property, electric conductivity, thin film, solid solution, conductivity, zinc selenide, mercury selenide

ABSTRACT: Polyocrystalline specimens and thin films of ZnSe-HgSe solid solutions were prepared and their conductivities were measured. The bulk materials were prepared by heating the vacuum distilled elements in quartz tubes with vibration and subjecting them to a sequence of anneals, ending with a 50 to 100 hour anneal at 500 to 600°C. X-ray investigations showed the materials thus obtained to be solid solutions with face-centered cubic lattices. The lattice constant varied linearly with composition. The materials rich in HgSe were very coarse grained, and the grain size decreased with increasing ZnSe content. The thin films were prepared by a method described elsewhere (M.V.Kot, V.G.Ty*rziu, A.V.Simashkevich, Yu.Ye.Maronchuk and

Card 1/3

ANDRONIK, I.K.; KOT, M.V.

Temperature dependence of the current carrier mobility in
cadmium antimonide crystals. Izv. AN SSSR. Ser. fiz. 28 no.6:
1028-1032 Je '64. (MIRA 17:7)

1. Kishinevskiy gosudarstvennyy universitet.

ACCESSION NR: AP4041369

perature). The Fermi energy was calculated for each film from the temperature dependence of the mobility and the thermal emf, and from this and the electron concentration, the effective mass of the conduction electrons was derived. The effective mass increased from 0.033 to 0.095 electron masses as the electron concentration increased from 8.1×10^{17} to $1.2 \times 10^{19} \text{ cm}^{-3}$. These values of the effective mass are in agreement with the findings of G.B.Wright, A.J.Strauss and T.C.Harman (Phys.Rev. 125,1534,1962), and their variation indicates that the conduction band deviates considerably from the parabolic form. The optical measurements revealed two absorption edges. One occurred at a photon energy of 2.8 eV independently of the electron concentration; it has been reported by M.Cardona and O.Harboke (Phys.Rev.Letters 8, 90,1962), who ascribed it to L_3-L_1 transitions between the valence and conduction bands. The long wavelength absorption edge shifted from 0.24 to 0.35 eV as the electron concentration increased from 8.1×10^{17} to $1.2 \times 10^{19} \text{ cm}^{-3}$. The energy gap was calculated by subtracting the corresponding Fermi energies from these values; it was found to be approximately 0.16 eV at room temperature. Orig.art.has: 3 formulas, 4 figures and 2 tables.

Card
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ACCESSION NR: AP4041369

S/0048/64/028/006/1023/1027

AUTHOR: Kot, M.V., Mshenskiy, V. A.

TITLE: Variation of the effective electron mass and optical activation energy in mercury selenide as a function of current carrier concentration [Report, Third Conference on Semiconductor Compounds held in Kishinev 16 to 21 Sep 1963]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.6, 1964, 1023-1027

TOPIC TAGS: semiconductor, thin film, optical absorption, energy gap, carrier density, mercury selenide

ABSTRACT: Thin films of HgSe were deposited by vaporization on various substrates under different conditions, and their conductivities, Hall constants, thermal emf's and optical absorption coefficients were measured. Films were obtained having conduction electron concentrations from 8.1×10^{17} to $1.2 \times 10^{19} \text{ cm}^{-3}$. The factor most strongly influencing the electron concentration was found to be the temperature of the substratum during deposition. The conductivities of all the films decreased slowly with increasing temperature, and the Hall constants were independent of the temperature. The Hall mobilities were proportional to $T^{-1.44}$ (T is the absolute tem-

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ACCESSION NR: AP4041361

conductive. The Hall mobilities increased with increasing grain size from 500 to 1000 $\text{cm}^2/\text{V sec}$ for the fine-grained films to 8000 to 10 000 $\text{cm}^2/\text{V sec}$ for the coarse-grained ones. The thermal emf increased with increasing temperature to a maximum at 320°K, and at higher temperatures, with the onset of intrinsic conduction, it decreased sharply with increasing temperature. The ratio of electron to hole mobility was calculated from the temperature dependence of the Hall constant and the thermal emf. It was found to be from 8 to 10 in the coarse-grained films and from 1 to 4 in the fine-grained ones. The mean free path of electrons and holes in InSb crystals was estimated for crystals having the same range of carrier concentration as the films. The estimated mean free path of the electrons ranged from 3×10^{-6} to 6×10^{-6} cm, and that of the holes, from 1.9×10^{-7} to 2.5×10^{-7} cm. It is concluded that the grain boundaries in the films cannot appreciably affect the mean free path of the holes, but that they can and do influence that of the electrons. Orig. art. has: 3 formulas and 2 figures.

ASSOCIATION: Kishinevskiy gosudarstvennyy universitet (Kishinev State University)

SUBMITTED: 00

ENCL: 00

SUB CODE: SS, IC

NR REF SOV: 004

OTHER: 001

292

ACCESSION NR: AP4041361

S/0048/64/028/006/0993/0995

AUTHOR: Kas'yan, V.A.; Kot, M.V.

TITLE: Concerning the influence of the structure of the layer on the current carrier mobility in indium antimonide films /Report, Third Conference on Semiconductor Compounds held in Kishinev 16 to 21 1963/

SOURCE: AN SSSR: Izvestiya. Soriya fizicheskaya, v.28, no.6, 1964, 993-995

TOPIC TAGS: semiconductor, thin film, electric conductivity, Hall effect, carrier mobility, grain size, indium antimonide

ABSTRACT: Thin films (0.5 to 2.5 microns) of n-type InSb were produced by a method described elsewhere (V.A.Kas'yan and M.V.Kot, Tr.fiz.poluprobodnikov, Kishinevsk.un.t 1,57,1962), and their conductivities, Hall constants, and thermal emf's were measured at temperatures from 130 to 500°K. By varying the thickness of the film and the temperature of the substratum during deposition, films were obtained with grain size (determined metallographically and electron-microscopically) from 10^{-4} to 10^{-6} cm and current carrier concentrations from 10^{16} to 10^{17} cm^{-3} . Of films with the same carrier concentration, those with the larger grain size were always the more

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L 3448-66

ACCESSION NR: AT5020490

ENCLOSURE: 02

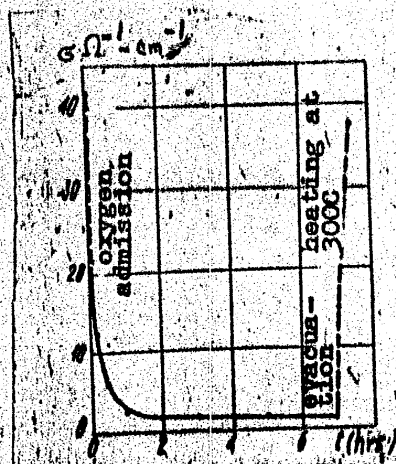


Fig. 2. Effect of sorbed oxygen on conductivity of CdSe layer

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L 3448-66
ACCESSION NR: AT5020490

ENCLOSURE: 01

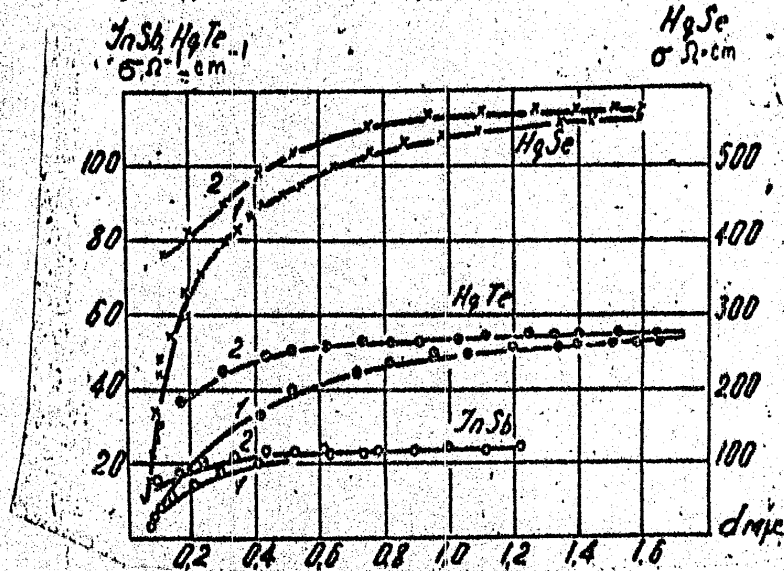


Fig. 1. Conductivity versus layer thickness for InSb, HgSe, and HgTe. 1—in oxygen atmosphere; 2—in vacuum or 10^{-5} mm Hg

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L 3448-66

ACCESSION NR: AT5020490

Vekshinskiy, and by vaporization of a mixture of the components from a single vaporizer (for InSb). The films represented polycrystalline layers with crystal dimensions of $\sim 10^{-5}$ - 10^{-4} cm. Examples of graphs of conductivity versus thickness and the effect of sorbed oxygen on conductivity are shown in Figs. 1 and 2 on the Enclosures. It was concluded that the dependence of electrical properties upon thickness for layers of InSb, HgSe, and HgTe was due to the dependence of effective mobility upon crystal size and the influence of surface states when thickness was reduced. For layers of CdSe, ZnSe, and CdTe, the dependence was due chiefly to the influence of surface states. Orig. art. has: 10 graphs, 1 table, and 14 formulas.

ASSOCIATION: none

SUBMITTED: 06Oct64

ENCL: 02

SUB CODE: SS

NO REF SOV: 009

OTHER: 002

C. 1 2/4

L 3448-66 EWT(1)/EWT(m)/ETC/EWP(1)/EWG(m)/T/EWP(t)/EWP(b)/EWA(h) IJP(o)
RDW/JD/GS/AT

ACCESSION NR: AT5020490

UR/0000/64/000/000/0432/0445

AUTHORS: Kot, M. V.^{44,55}; Kas'yan, V. A.^{44,55}; Maronchuk, Yu. Ye.^{44,55}; Mshenskiy, V. A.^{44,55}; Simashkevich, A. V.^{44,55} 74/81

TITLE: The dependence of the electrical properties of thin layers of certain binary compounds upon thickness and upon the surrounding atmosphere^{44,55}

SOURCE: Mezhvuzovskaya nauchno-tehnicheskaya konferentsiya po fizike poluprovodnikov (poverkhnostnyye i kontaktnyye yavleniya). Tomsk, 1962.
Poverkhnostnyye i kontaktnyye yavleniya v poluprovodnikakh (Surface and contact phenomena in semiconductors). Tomsk, Izd-vo Tomskogo univ., 1964, 432-445^{44,55}

TOPIC TAGS: indium compound, mercury compound, cadmium compound, zinc compound, electric property, Hall constant, semiconductor, conductivity

ABSTRACT: The dependence of the conductivity, differential thermo-emf, and Hall constant upon thickness and the surrounding atmosphere was studied for thin layers of InSb, HgSe, HgTe, CdSe, ZnSe, and CdTe. The work was done to determine the effect of surface states on the electrical properties of semiconductors. Thin layers of the above compounds were prepared by vaporization of polycrystalline alloys or single crystals of these compounds, by the method of academician

Card 1/4

KAS'YAN, V.A.; KOT, M.V.

Some optical and electric properties of thin films of indium antimonide. Izv. vys. ucheb. zav.; fiz. no.5:14-20 '63. (MIRA 16:12)

1. Kishinevskiy gosudarstvennyy universitet.

Temperature dependence of the mobility of current carriers in crystals of cadmium antimonide. I. K. Andronik, M. V. Kot.

Temperature dependence of the mobility of current carriers in crystals of zinc antimonide. M. V. Kot, I. V. Kretzu.

Electrical properties of crystals of antimony sesquiselenide. M. V. Kot, S. D. Shutovo. (Presented by M. V. Kot--20 minutes).

Report presented at the 3rd National Conference on Semiconductor Compounds, Kishinev, 16-21 Sept 1963

Negative magnetoresistivity in hexagonal, n-type silicon carbide.
V. Mirzabayev, V. M. Tuchkevich, Yu. V. Shmartsev (10 minutes).

Structure and electrical properties of the system CdSe-HgSe.
M. V. Kot, V. A. Mshenskiy.

Structure and electrical properties of the system HgTe-ZnTe.
S. A. Danilyuk, M. V. Kot.

Structure and electrical properties of the system ZnSe-HgSe.
M. V. Kot, A. V. Simashkevich.

Report presented at the 3rd National Conference on Semiconductor Compounds,
Kishinev, 16-21 Sept 1963

Some electrical and galvanomagnetic properties of films of indium arsenide. V. A. Kas'yan.

Concerning the influence of the structure of the layer on the value of the mobility of current carriers in films of indium antimonide. V. A. Kas'yan, M. V. Kot.

Dependence of effective mass of electrons and optical activation energy on the concentration of current carriers in mercury selenide.

M. V. Kot, V. A. Mshenskiy.

(Presented by V. A. Kas'yan--15 minutes).

Report presented at the 3rd National Conference on Semiconductor Compounds, Kishinev, 16-21 Sept 1963

KOT, M.V.; SIMASHKEVICH, A.V.

Transverse cathode conductivity of crystals and thin films of
All and BVI type compounds. Radiotekh. i elektron. 7 no.9:1672--
1679 S '62. (MIRA 15:9)
(Transistors) (Dielectrics) (Electric conductivity)

24.7700

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S/181/62/004/006/024/051
B104/B112

AUTHORS: Kot, M. V., Tyrziu, V. G., Simashkevich, A. V.,
Maronchuk, Yu. Ye., and Mshenskiy, V. A.

TITLE: The dependence of the activation energy on the molar
composition in thin layers of some $A^{II}B^{VI}$ - $A^{II}B^{VI}$ systems

PERIODICAL: Fizika tverdogo tela, v. 4, no. 6, 1962, 1535 - 1541

TEXT: Thin layers of the systems ZnSe-CdSe, ZnTe-CdTe, ZnSe-HgSe, CdSe-HgSe, and CdTe-HgTe were prepared by Vekshinskiy's method. The layers were sputtered onto cold and heated glass and mica backings and subsequently annealed in vacuo or air. The layers sputtered onto cold backings revealed an inhomogeneous structure. The activation energy was determined from the temperature dependence of electrical conductivity, and from the spectral dependence of photo-conductivity at room temperature. Under certain temperature conditions, layers could be obtained having continuously variable composition. The optical activation energy of the systems ZnTe-CdTe, ZnSe-HgSe, and CdTe-HgTe

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L 10057-63

EWI(1)/BDS--APFIC/ASD/ESD-3--CO/IJP(C)

ACCESSION NR: AR3000380

S/0058/63/000/004/E067/E067

57

SOURCE: RZh. Fizika, Abs. 4E452

AUTHOR: Kot, M. V.; Maronchuk, Yu. Ye.

TITLE: Electric, optical, and photoelectric properties of the CdTe-HgTe system in thin layers,

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 131-141

TOPIC TAGS: CdTe-HgTe system, thin layers, electric properties, optical properties, photoelectric properties

TRANSLATION: Specimens were obtained by simultaneous evaporation of binary compounds in a vacuum of 10 sup -5 mm Hg on heated outgassed substrates with subsequent annealing; the thickness of the specimens was measured with an interference microscope. The electric conductivity Sigma was measured in the temperature interval from -100 to +100 or +200 degrees C in vacuum and in air, and the volt-ampere characteristics are linear; Sigma decreases monotonically

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L 10053-63

EFT(1)/EDS/EDC(b)-2--AFFIC/ASD/RSD-3--IJP(C)

ACCESSION NR: AR3000379

S/0058/63/000/004/E067/E067

SOURCE: RZh. Fizika, Abs. 4E451

AUTHOR: Kot, M. V.; Simashkevich, A. V.; Tyrziu, V. G.; Tsurkan, A. Ye.

TITLE: Electric, optical, and photoelectric properties of thin layers of the ZnTe-CdTe system

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 121-130

TOPIC TAGS: ZnTe-CdTe system, thin layers, electric properties, optical properties, photoelectric properties

TRANSLATION: In order to obtain a system with prescribed properties, a study was made of the ZnTe-CdTe system. The specimens were obtained by separate or by combined evaporation of binary components on heated substrates with subsequent heating until a homogeneous solid solution was obtained, as monitored by the appearance of only one long-wave absorption edge. The volt-ampere characteristics

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Card 2/2

L 10055-61

EX(1)/EDS/EEC(1)-2--ARTTC/ASD/ESD-3--IJP(0)
ACCESSION NR: AR3000364 8/0058/61/000/004/E074/E074

SOURCE: RZh. Fizika, Abs. 4E488

AUTHOR: Kot, M. V.; Simashkevich A. V.; Tyrziu, V. G.

TITLE: Electrical, optical, and photoelectric properties of thin layers of the ZnSe-CdSe system ²¹

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 110-120

TOPIC TAGS: Thin layers, ZnSe-CdSe system, electrical and optical properties, photoelectric properties

TRANSLATION: An investigation was made of the electric conductivity, photoconductivity, and optical properties of layers of the ZnSe-CdSe system, obtained by simultaneous evaporation of ZnSe and CdSe on glass and quartz substrates heated to 260° C, as functions of the percentage composition of the components. The specific conductivity decreases monotonically, and the

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L 10054-63

ACCESSION NR: AR3000383

made of Sn, Pb, and In. Electrodes of Aquadag and silver turned out to be non-ohmic. It has been established that the specific resistivity of layers of thickness 0.6 μ is independent of the thickness. This is attributed to the increase in the dimensions of the crystalline grains with increasing thickness of the layer, and also to the production of surface absorption states by the sorbed oxygen. The specific resistivity of layers of thickness less than 0.5 μ is on the order of 0.1 ohm-cm, corresponding to its value for bulky specimens of indium phosphide. On the basis of the values of the coefficients of transmission and reflection of light with wavelengths 0.7 to 1.3 micron, spectral absorption and refraction characteristics were obtained. The width of the forbidden zone was determined from the edge of the principal absorption and was found to be 1.27 eV at room temperature. The value of the refractive index at wavelengths greater than 1.3 micron is 3.9. Yu. Ukhanov.

DATE ACQ: 14May63 ENCL: 00 SUB CODE: PH

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Card 2/2

L 10054-61

EWI(1)/BDS/EEG(b)-2--AFFTC/ASD/ESD-3--IJP(C)

ACCESSION NR: AR3000383 S/0058/63/000/004/E073/E074

58

SOURCE: RZh. Fizika, Abs. 4E487

AUTHOR: Kot, M. V.; Migal', N. P.

TITLE: Some electrical and optical properties of thin layers² of indium phosphide

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 105-109

TOPIC TAGS: Semiconductors, thin layers, indium phosphide, electrical and optical properties

TRANSLATION: Thin layers of indium phosphide were obtained by evaporating in vacuum either bulky specimens of polycrystalline indium phosphide, or else P and In separately, on glass substrates. The most stable layers were obtained by the second method of evaporation on a substrate heated to 260° C WITH SUBSEQUENT ANNEALING AT THE SAME TEMPERATURE FOR TWO HOURS. The thickness of the layers was measured with the aid of an interference microscope. The measurement of the specific resistivity of layers of the n-type was with the aid of electrodes

Card 1/2

L 10048-63

ACCESSION NR: AR3000378

conductivity and a reversal in the sign of the thermal emf (Alpha). The course of the dependence of the electric conductivity (Sigma) on the thickness of the layer d after annealing remains the same, although the absolute value of Sigma changes. At a thickness less than 0.2 micron, Alpha reverses sign. The Hall constant decreases sharply at thicknesses lower than 0.5 microns. The activation energy calculated from the temperature curve lies in the range 0.03--0.015 eV, which is in good agreement with the bulk specimen. The authors believe that even at room temperature the layers have intrinsic conductivity. To clarify the causes of the "strange" behavior of Alpha with variation of the thickness, experiments were made with specimens placed in vacuum. The experiments have shown that in this case Alpha does not reverse sign. From the data on Alpha, the relationship $b = \frac{\mu_{\text{sub } n}}{\mu_{\text{sub } p}} = f(d)$ is determined ($\mu_{\text{sub } n}$ and $\mu_{\text{sub } p}$ are the mobilities of the electrons and the holes). $f(d)$ decreases sharply when d is less than 0.5 micron. Thus, the results are attributed to the presence of surface states of the acceptor type and to the decrease of electron mobility with decreasing d. Yu. Ogryn

DATE ACQ: 14May63

ENCL: 00

SUB CODE: PH

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EWI(1)/BDS/EEC(b)-2--AFPTC/ASD/ESD-3--IJP(C)/00

L 10048-63

ACCESSION NR: AR3000378

S/0058/63/000/004/E067/E067

SOURCE: RZh. Fizika, Abs. 41450

AUTHOR: Kot, M. V.; Maronchuk, Yu. Ye.

TITLE: Dependence of the electric properties of thin layers² of mercury telluride on the thickness

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 77-84

TOPIC TAGS: mercury telluride, thin layers, thickness dependence, electric properties

TRANSLATION: An investigation was made of the properties of HgTe layers made by two methods: 1) evaporation of the bulk specimen in vacuum, 2) evaporation of Te in Hg vapor. The results of the investigations of both types of layers coincide. All measurements were carried out with specimens having reproducible characteristics, this being attained by annealing the layer in vacuum at 100°C. Heating at a temperature higher than 100°C. leads to a sharp increase in the

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L 10045-63

ACCESSION NR: AR3000377

sup -1 and its differential thermal emf (Alpha) drops from 160 to 60 microvolts per degree. The Hall constant (R) does not depend on d when d ranges from 0.03 to 1.2 micron. Annealing in vacuum leads to a sharp increase in Sigma and R. The character of the dependence of Sigma and R on d in air remains the same after annealing. With increasing temperature of the layer, the value of R does not change, while Sigma decreases, indicating degeneracy of the electron gas and the presence of impurity conductivity at room temperature. From the measured values of Sigma, R, and Alpha, there were determined the carrier concentrations (n approximately equal to 6 times 10 sup 18 cm sup -3), their mobility (Mu approximately equal to 200--700 Sq. cm/v. sec), and effective mass (m* equals 0.035 m sub 0). It is shown that on layers that are outgassed in vacuum the value of Alpha does not depend on d, while a dependence on the thickness is observed for Sigma when d is less than 0.5 Mu. These measurements have also disclosed the presence of surface states produced as a result of adsorption of air and serving as traps for the electrons. A. Zhdan

DATE ACQ: 14 May 63

ENCL: 00

SUB CODE: PH

cs/

Card

2/2

EWI(1)/BDS/EDC(b)-2--AFFTC/ASD/ESD-3--IJP(C)/GG

L 10045-63

ACCESSION NR: AR3000377

S/0058/63/000/004/E066/E067

SOURCE: RZh. Fizika, Abs. 4E449

AUTHOR: Kot, M. V.; Mahenskiy, V. A.

TITLE: Dependence of electric properties of thin layers²¹ of mercury selenide on the thickness

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 70-76

TOPIC TAGS: dielectrics, thin layers, mercury selenide, electric properties

TRANSLATION: Layers of HgSe with thickness d ranging from 0.3 to 1.2 microns were prepared by thermal sublimation of bulk specimens in vacuum and evaporation of Se and mercury vapor. The investigations were carried out on n-type specimens, which were obtained at substrate temperatures 80-100°C. The measurement data for HgSe layers produced by both methods turned out to be analogous. It is observed that as the thickness of the layer (d) increases from 0.03 to 0.6 microns, the specific conductivity (σ) increases from 50 to 350 ohm sup -1 cm

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L 10056-63

ACCESSION NR: AR3000376

dependence of the variation of Sigma in the magnetic field. This dependence is determined by the temperature dependence of Mu. An investigation of the influence of the atmosphere on Sigma has shown that it is appreciable only at thicknesses less than 0.5 Mu. This influence reduces to the occurrence of traps on the surface of the layer. For some specimens, the calculated number of surface states is of the order of 10^{10} -- 10^{11} cm² sup -2.

Yu. Ogrin

DATE ACQ: 14 May 63 ENCL: 00 SUB CODE: PH

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Card 3/3

I 10056-63

ENT (1)/BDS/ED (b)-2--AFFTC/ASD/ED-3--IJP (G)

ACCESSION NR: AR3000376

S/0058/63/000/004/EO 65/EO 66

58

SOURCE: RZh. Fiz ka Abs. 4E44

AUTHOR: Kas'yan, V. A.; Kot, M. V.

TITLE: Production technology and electric properties of thin layers of indium antimonate with high electron mobility 21

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 57-69

TOPIC TAGS: semiconductors, indium antimonate, thin layers, production technology

TRANSLATION: The structure and the electric properties of thin layer of In Sb, obtained by the Vakshinskiy method, have been investigated. The structure of the layer was investigated as a function of the thickness of the layer, the substrate temperature during the sputtering time, and the substrate material. The results have shown that the graininess of the layer is greatly influenced by the thickness of the layer and by the substrate temperature. The material of the latter does

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L 10044-63

ACCESSION NR: AR3000375

calculation of the temperature dependence of the components of the conductivity tensor, from which the width of the forbidden zone and the activation energy of the lattice imperfections are found to be 1.06 and 0.14 ev, respectively. It is shown that Sb sub 2 Se sub 3 is a 2-axis crystal, and the positions of the optical axes are determined. The values of the refractive indices in the direction of the principal dielectric axes are given. The optical activation energy and the refractive index for one and the same crystallographic direction depend on the polarization of the light. Such a dependence indicates probably that the energy beams in antimony selenide has a complex structure. V. Gurevich

DATE ACQ: 14May63 ENCL: 00

SUB CODE: PH

cs/ ja
Card 2/2

ENT(1)/BDS/EEG(b)-2--AFFTC/ASD/ESD-3--P1-4--IJP(C)
L 10044-63

ACCESSION NR: AR3000375

S/0058/63/000/004/E066/E066

SOURCE: RZh. Fizika, Abs. 4E447

62

AUTHOR: Kot, M. V.; Shutov, S. D.

TITLE: Anisotropy of electric conductivity and optical properties of antimony selenide crystals

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 47-53

TOPIC TAGS: antimony selenide crystals, electrical and optical properties, semiconductors

TRANSLATION: The properties of single crystals of $Sb_{sub 2}Se_{sub 3}$, which are characterized by a rhombic lattice with layered structure and therefore have anisotropic properties, have been investigated. The results of the measurements of the electric conductivity, as a function of the temperature, along the three crystallographic directions show that the component perpendicular to the cleavage plane is five times smaller than the two others. A formula is presented for the

Card 1/2

L 10073-63 EWT(1)/EWT(m)/EWE(q)/BDS/REC(b)-2--AFPTC/ASD/ESD-3--
JPF(C)/JD/JG
ACCESSION NR: AR3000373 S/0058/63/000/004/E064/E064

SOURCE: RZh. Fizika, Abs. 4E433

AUTHOR: Andronik, I. K.; Kot, M. V.; Shcherban, D. A.

TITLE: Electric properties of single crystals of cadmium antimonate doped with impurities

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 37-46

TOPIC TAGS: semiconductors, doped cadmium antimonate, single crystals, electric properties

TRANSLATION: CdSb crystals doped with impurities of groups Three, Four, and Six (In, Pb, and Te) were investigated. The temperature dependences of the specific conductivity, the differential thermal emf and of the Hall effect were measured in different crystallographic directions. Assuming that at temperatures above 20° K the mechanism of scattering by phonons is effective, the formula $\ln \sigma = f(1/T)$ was used to calculate the value of the forbidden band, 0.57 ev.

Card 1/2

lm/ ja
Card 2/2

S/058/63/000/003/073/104
A059/A101

AUTHORS: Kot, M. V., Maronchuk, Yu. Ye.

TITLE: Photoelectric properties of thin layers of cadmium telluride

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1963, 78, abstract 3E545
("Tr. po fiz. poluprovodnikov. Kishinvesk. un-t", 1962, no. 1, 85 - 91)

TEXT: CdTe layers prepared by vaporization of polycrystalline alloys and single crystals onto backings, heated to 250 - 300°C, in vacuum were shown to exhibit noticeable photoconductivity. The photoconductivity of the layers depends on thickness. When the thickness is reduced to less than 4 μ , it sharply decreases. In order to increase the photosensitivity of CdTe layers, they should be annealed in the air at 450 - 500°C for a short time. The photosensitivity of the layers can be increased by way of doping them with Cd and In impurities. Doping with Cd increases the multiplicity, and, with In, the magnitude of the specific photosensitivity. The photoelectric activation energy calculated from the spectral characteristics corresponds to 1.40 - 1.43 eV at room temperature.

Card 1/2

L 10030-63 EWT(1)/BDS/EEC(b)-2--AFPTC/ASD/KSD-3--IJP(C)
ACCESSION NR: AR3000374 S/0058/63/000/004/E064/E064
SOURCE: RZh. Fizika, Abs. 4E434 58
AUTHOR: Kot, M. V.; Shurcov, S.D.
TITLE: Some electric properties of crystals of antimony triselenide
CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 54-56
TOPIC TAGS: antimony triselenide crystals, electric properties, semiconductors
TRANSLATION: Homogeneous single crystals of $Sb_{sub 2}Se_{sub 3}$ of the n and p type were obtained by doping with tin and antimony. The tin is a donor impurity, while the antimony, without changing the hole character of the conductivity of the stoichiometric crystal, increases the electric conductivity by four orders of magnitude. The electric conductivity and the thermal emf were investigated with current flowing along the cleavage plane, that, in the direction of the [001] axis. From the data on the electric conductivity

Card 1/2

bm/Kel
Card 2/2

ANDRONIK, I.K.; KOT, M.V.; SHCHERBAN, D.A.

Electric properties of single-crystal cadmium antimonide with
various admixtures. Trudy po fiz. poluprov. no.1:37-46 '62.
(MIRA 16:11)

L 15171-63 EWT(1)/EWP(k)/EWP(q)/EWT(m)/BDS/EEO(b)-2 AFFTC/ASD/ISD-3
 ID/AT/LIP(C)
 ACCESSION NR: AR3003340 S/0058/63/000/005/E073/E073

SOURCE: RZh. Fizika, Abs. 5E459 72

AUTHOR: Kot, M. V.; Kretsu, I. V.; Lebedev, P. I.

TITLE: Electric properties of crystals of zinc antimonide doped with gallium 27

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vy'p. 1, 1962, 28-36

TOPIC TAGS: zinc antimonide, single crystal, conductivity, Hall constant, thermal emf, gallium doping, mobility ratio

TRANSLATION: The temperature dependence of the electric conductivity (σ), the Hall constant (R), and the thermal emf (α) of single crystals of ZnSb doped with Ga were measured. The single crystals were grown by the zone-melting method and had a rhombic lattice. The components of the tensors α , σ , and R along the a , b , and c axes were determined. It is assumed that Ga serves as a compensating (donor) mixture and has low solubility in ZnSb, since the conductivity mechanism does not change in the low-temperature region. The results of the measurements were used to calculate the width of the forbidden zone $\Delta E_0 = 0.64$ eV and the ratio of the mobilities ($U_n/U_p = 0.3-0.4$). The effective mass of the holes is $m_p = 0.7m_0$.

E. Smolyarenko

Card 1/1 DATE ACQ: 17 Jan 63 SUB CODE: PH ENCL: 00

L-15168-63

ACCESSION NR: AR3003344

respectively. Purification of the surface of the CdS crystals by electron bombardment reduces the rate of surface recombination by approximately 5 times. It is shown that the energy of production of an additional pair amounts to 9.6 and 8.1 eV in CdS and CdSe, respectively. The lifetimes of the holes in the crystals of these substances lies in the interval 10^{-10} — 10^{-11} sec and is approximately eight orders of magnitude smaller than the lifetimes of the electrons. A. Zhdan

DATE ACQ: 17Jun63

SUB CODE: PH

ENCL: 00

Card 2/2

L 15168-63

EWI(1)/EWG(k)/EMP(q)/EWT(m)/BDS/EEG(b)-2/ES(w)-2 AIRTC/
ASD/ESD-3/SSD Pa-4/Pab-4 RDW/JD/AT/RH/IJ1(C)

ACCESSION NR: AR3003344

S/0058/63/000/005/E093/E093

SOURCE: RZh. Fizika, Abs. 5E587

AUTHOR: Kot, M. V.; Simashkevich, A. V.TITLE: Effect of surface recombination on the cathode conductivity of CdS and CdSe crystals

CITED SOURCE: Tr. po fiz. poluprovodnikov. Kishinevsk. un-t, vyp. 1, 1962, 19-27

TOPIC TAGS: cathode conductivity, surface recombination, diffusion length, carrier lifetime, cadmium sulfide, cadmium selenide

TRANSLATION: The authors have experimentally investigated previously (RZhFiz, 1958, No. 8, 18333) the dependence of the cathode conductivity of CdS and CdSe crystals on the energy of the primary electrons. By comparing the results of such investigations with the theory developed by Gergeli (RZhFiz, 1961, 10E443), several parameters were determined, characterizing the surface recombination of carriers in CdS and CdSe. An estimate is made of the diffusion length L ; $L = 0.12\mu$ and 0.055μ for CdS and CdSe, respectively. At a pressure of 10^{-5} mm Hg, the rate of surface recombination amounts to 8×10^5 and $8.6 \times 10^5 - 8.6 \times 10^6$ cm/sec for CdS and CdSe,

Card 1/2

Electrical properties of...

28074
S/181/61/003/009/006/039
B102/B104

absolute values of resistivity differ in the axial directions \vec{b} and \vec{c} . The type of temperature dependence is the same. The components R_{321} and R_{231} of the Hall-effect tensor are positive over the whole temperature range (R_{321} : current $\parallel \vec{b}$, $H \parallel \vec{a}$, Hall emf $\parallel \vec{c}$; R_{231} : current $\parallel \vec{c}$, $H \parallel \vec{a}$, Hall emf $\parallel \vec{b}$). The curve $\ln R = f(1/T)$ shows, for the R_{321} component, a maximum at $1/T = 0.25$. While the R-components are independent of \vec{H} at room temperature and liquid-hydrogen temperature, they become smaller at 4.2°K on a rise of \vec{H} . At 90°K, the relative change of resistivity in the magnetic field is linearly dependent on H^2 . At 4.2°K, $\Delta q/q H^2$ drops with growing H . The anisotropy of the CdSb crystals was also observed in the rotation diagrams $\Delta q/q = f(\varphi)$ constructed at 4.2°K and $H = 5300$ oe. The most interesting fact revealed by the results is that the curve $R(T)$ passes a maximum at about 4°K, while, at the same temperature, the curve $\delta(T)$ passes from a weakly exponential slope to a steeper one. This behavior reminds of that of the Hall effect in p-type Ge with an acceptor concentration of $\sim 10^{16} \text{ cm}^{-3}$, and may be explained with the hypothesis concerning the impurity conductivity

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24-7700 also 1114, 2801

28074

S/181/61/003/139/006/059
B102/B104

AUTHORS: Andronik, I. K., Kot, M. V., and Yemel'yanenko, O. V.
TITLE: Electrical properties of cadmium antimonide single crystals at low temperatures

PERIODICAL: Fizika tverdogo tela, v. 3, no. 9, 1961, 2548 - 2552

TEXT: Pure CdSb single crystals were examined for the temperature dependence of the two components of the conductivity tensor, of the Hall effect, and of the magnetic resistivity between 2.4 and 78°K. The specimens were two blocks of single crystals obtained by the Bridgman method. The crystals had previously been recrystallized three times in H₂ atmosphere. The specimens were 4.4×10 mm large, and the faces were perpendicular to the axes \vec{a} [100], \vec{b} [010], and \vec{c} [001]. V. I. Ded' of the Moldavskiy filial AN SSSR (Moldavian Branch of the AS USSR) checked these data by X-ray structural analysis. One of the specimens was cleaved along the \vec{b} axis, and along the \vec{c} axis the other. A measurement of the temperature dependence of the resistivity ($\ln R = f(1/T)$) showed that the

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22037

S/181/61/003/004/003/030
B102/B214

Effect of the contact ...

$I_1 = 1 \cdot 10^{-7}$ a, and 25 v at the sample). Here, the relationships are completely reversed: The cathode conductivity drops in the region near the cathodes and reaches a maximum in the central region (near the electrode which, at the given moment, is the cathode). Fig. 3 shows the characteristics of CdSe with mixed contacts (2.4 kev, $6 \cdot 10^{-7}$ a, 25 v). Independently of the polarity, the lowest conductivity here is on the side of the Au contact near which also a maximum of the characteristic appears. A minimum appears near the In contact, and in the immediate neighborhood there occurs a steep rise independently of the polarity. The results are indicative of a special role of the holes on irradiation of parts away from the cathode. The authors thank D. N. Nasledov for advice and interest. There are 3 figures and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Kishinevskiy gosudarstvennyy universitet (Kishinev State University)

SUBMITTED: May 10, 1960 (initially), November 30, 1960 (after revision)

Card 3/4

22037

S/181/61/003/004/003/030
B102/B214

Effect of the contact ...

between them was about 5 mm, 10 times as large as the diameter of the probe. In all, three groups of samples were measured: The first group consisted of CdS and CdSe crystals with ohmic contacts (In), the second of such with nonohmic contacts (Au), and the third of mixed contacts (In - Au). The crystals showed no cathodoluminescence. Fig. 1 shows a typical probe characteristic for samples of the first group. The ordinate is the cathode conduction current I_k , defined as the difference between the current flowing through the sample on irradiation and the dark current. The abscissa is the potential between the plate moving the probe and one of the electrodes. The characteristics in Fig. 1 were taken for a single crystal of CdSe with an electron energy $V_1 = 3$ kev, a current strength of the irradiating beam $I_1 = 4 \cdot 10^{-8}$ a, and a potential of 25 v at the sample. Curve 2 was taken for the reversed polarity. A characteristic feature of these samples is that the cathode conductivity in the central region is practically independent of the point of incidence of the electron beam and of the direction of the field. Fig. 2 shows analogous characteristics for single crystals of CdSe with Au contacts. ($V_1 = 3$ kev,

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22037

24, 7700(1035, 1043, 1143)
26.2421

S/181/61/003/004/003/030
B102/B214

AUTHORS: Simashkevich, A. V., Kot, M. V., and Panasyuk, L. M.

TITLE: Effect of the contact material on the cathode conductivity of cadmium sulfide and cadmium selenide

PERIODICAL: Fizika tverdogo tela, v. 3, no. 4, 1961, 1035-1037

TEXT: While the effect of the contact material on the photoconductivity of CdS has been studied many times before, among others also by V. Ye. Lashkarev, D. N. Lazarev, and M. K. Sheynkman, its effect on the cathode conductivity had not yet been investigated. The authors have investigated now the effect of ohmic and nonohmic contacts on the distribution of the cathode sensitivity in single crystals of CdS and CdSe by a probe method described by them in Ref. 4 (Uch. zap. Kishinevsk. gos. univ. 29, 201, 1957). To study the role of the electrodes, "probe characteristics" were taken, i.e., the samples were irradiated by a narrow electron probe which could be moved from one electrode to the other. The single crystals studied came from I. B. Mizetskaya of IF AN USSR (Institute of Physics, AS UkrSSR). The electrodes were evaporated on the crystal in vacuo. The distance

Card 1/4

Thermal dissociation of cadmium and zinc ...B102/B104 S/837/61/049/000/008/011

numerical data on hole concentration and conductivity it can be seen that both σ and n increase after annealing in the low temperature range, but their values slowly decrease when the annealed crystals are held at room temperature for a longer period. These changes are caused by thermal dissociation, i. e. thermal motion raises the number of interstitial atoms (Frenkel' defects) which act as additional "impurities". When the crystal is cooled down these atoms return very slowly to free sites. The dissociation energy was found to be 0.45 ev for CdSb and 0.5 ev for ZnSb, the Frenkel' defect concentration at 20°C was $4.1 \cdot 10^{15}$ and $3.3 \cdot 10^{16} \text{ cm}^{-3}$, respectively. There are 6 figures.

Card 2/2

h1696

S/837/61/049/000/008/011
B102/B104

AUTHORS: Andronik, I. K., Kot, M. V., Kretsu, I. V.

TITLE: Thermal dissociation of cadmium and zinc antimonide crystals

SOURCE: Kishinev. Universitet. Uchenyye zapiski. v. 49, 1961, 105-111

TEXT: The irreversible changes occurring in the electric properties of ZnSb and CdSb when these semiconductors are heated above a certain temperature (150°C for CdSb and 100°C for ZnSb) are investigated in detail. The time dependence $\sigma(\tau)$, and the temperature dependence $R(T)$, were measured in CdSb single crystals characterized by $\sigma \approx 0.50 (\text{ohm}\cdot\text{cm})^{-1}$ and by an acceptor concentration of $N_A \approx 4.0 \cdot 10^{15} \text{ cm}^{-3}$, also in ZnSb with $\sigma \cdot 4.65 (\text{ohm}\cdot\text{cm})^{-1}$ and $N_A \approx 3.3 \cdot 10^{16} \text{ cm}^{-3}$. In both cases the $\sigma(\tau)$ -curves for annealed samples show saturation after about 20 hrs. When saturation was reached, $R(T)$ was measured both before and after annealing (200°C for CdSb and 295°C for ZnSb). The curves, $\ln R = f(1/T)$, again show saturation, the values of $R = \text{const}$ being dependent on annealing. From Card 1/2

The temperature dependence of the ...

S/837/61/049/000/007/011
B102/B104

reproducible results. When gas is adsorbed on the specimens the cathodic conductivity is much lower, but only so below 0°C. The photoconductivity, measured with specimens irradiated by white light, showed a similar temperature dependence and is affected by adsorbed air in a similar and reversible way. Also the temperature dependence of the dark conductivity is strongly influenced by surface degasification. The conductivity maximum observed near room temperature for mono- and polycrystalline as well as film samples vanishes when the samples are degasified. There are 4 figures.

Card 2/2

L1695
S/837/61/049/000/007/011
B102/B104

AUTHORS: Kot, M. V., and Simashkevich, A. V.

TITLE: The temperature dependence of the cathodic conductivity of cadmium sulfide and selenide

SOURCE: Kishinev. Universitet. Uchenyye zapiski. v. 49, 1961, 101-104

TEXT: A special tube was devised and constructed for measuring the temperature dependence of the cathodic, photo- and dark conductivity of CdS and CdSe. The measuring circuit was the same as already used (Uch. zap. KGU, 29, 201, 1957). The pressure inside the tube was not above 10^{-5} mm Hg. The measurements were made with crystals obtained from the gaseous phase which were glued onto glass backings, and with CdSe films condensed in vacuo onto hot (200°C) glass bases. The temperature dependence of the cathodic conductivity was measured using an electron beam of 3 kev and $2 \cdot 10^{-8}$ a. The specimens investigated were held in vacuo for 24 hrs and purified by electron bombardment so as to ensure well

Card 1/2

KOT, M.V.; TYRZIU, V.G.

Optical properties of thin films of cadmium selenide, zinc selenide, and zinc telluride behind the main long-wave absorption edge. Uch. zap. Kish. un. 49:92-100 '61. (MIRA 15:7)

(Cadmium selenide--Optical properties)

(Zinc selenide--Optical properties)

(Zinc telluride--Optical properties)

KOT, M.V.; MARONCHUK, Yu.Ye.

Optical properties of thin films of cadmium telluride. Uch. zap.
Kish. un. 49:86-91 '61. (MIRA 15:7)
(Cadmium telluride--Optical properties)

Some electric properties of thin cadmium ...B102/B104 S/837/61/049/000/006/011

excess Te. Another series of experiments was made with InSb films from sublimation of InSb single crystals made by Bridgman's method. Pure polycrystals, too, were used for this purpose. The layers were furnished with ohmic contacts of aquadag or gold in order to measure $\sigma(T)$, $\sigma(d)$, the volt-ampere characteristics and the potential distributions. Results: Sublimated CdTe does not dissociate; when deposited on a base of 20°C its structure is unstable. Stability can be reached when the base is heated above 250°C; films deposited on a hot base are always p-type. The increase of σ when d is reduced from 0.5 to 0.2 μ is attributed to sorption of air. Silver-doped CdTe films are p-type, indium-doped films are n-type. The InSb films produced had the same properties as the bulk material. The forbidden-band width, determined from $\sigma(T)$, was 1.45-1.5 ev. There are 5 figures.

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41591

S/837/61/049/000/006/011
B102/B104

AUTHORS: Kot, M. V., and Maronchuk, Yu. Ye.

TITLE: Some electric properties of thin cadmium telluride films

SOURCE: Kishinev. Universitet. Uchenyye zapiski. v. 49, 1961, 78-85

TEXT: To arrive at the best conditions for producing films their electric, optical and photoelectric properties were determined. The films were produced by evaporating Cd and Te from tungsten and condensing onto cold or hot glass backings. Their physical properties depended greatly on the Cd-Te concentration ratio. Pure Cd and Te have the same conductivity in bulk and as a film whereas any mixture has a lower one, and the 50:50 concentration shows minimum conductivity. The type of conductivity depends both on concentration and on temperature. Hence the stoichiometric composition is p-type at room temperature and n-type above that. Since annealing is attended by an ordering process, annealing in vacuo irreversibly changes the conductivity. InSb sublimation tests carried out with a backing separated into stripes 4 mm wide showed that at 250°C the excess Cd is almost completely sublimated, and at 350°C the

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The electrical properties of indium ... 3/837/61/049/000/005/011
B102/B104

of stoichiometric composition, but less easily on evaporating mono- or polycrystalline InSb. Conductivity and Hall coefficient were measured in the usual ways with silver or aquadag ohmic contacts, and the temperature dependences of these coefficients were compared as between films produced under different conditions. Additional annealing (300°C) in vacuo of films condensed onto cold bases increased the mobility and reduced the free-carrier concentration. The carrier concentration of films condensed onto hot bases was not changed by annealing, but the mobility again was raised, this being due to a growth of the grain size. Thus the production of InSb films having carrier mobilities similar to those of polycrystalline InSb is only a question of grain size. Since oxygen forms electron traps, any sorption of air affects also the electric properties. The Hall coefficient of film $\approx 0.1\mu$ thickness depends on the magnetic field strength. There are 5 figures.

Card 2/2

41693

24 7700

S/837/61/049/000/005/011
B102/B104

AUTHORS: Kas'yan, V. A., Kot, M. V.

TITLE: The electrical properties of indium antimonide films

SOURCE: Kishinev. Universitet. Uchenyye zapiski. v. 49, 1961, 69-77

TEXT: InSb crystals would be a good material for producing Hall emf transmitters if their conductivity were not so high. Therefore it would be of great advantage to have InSb in the form of films with properties not differing too much from those of the crystals. Until now the problem of making these has not been solved, but a rather promising approach to its solution is offered by a film production method described here. The best results were obtained using a 500 mg mixture of 70% In + 30% Sb evaporated from a graphite crucible by heat from a tungsten spiral. The vapor was condensed onto a hot (200-300°C) or cold (20°C) glass backing held in a nickel frame with provision for heating it to 500°C, the whole arrangement being contained in an evacuated glass tube. The glass base was pre-annealed at 400°C. This method made it possible, to obtain films

Card 1/2

Cathodic conductance

30476
S/139/61/000/005/014/014
E073/E335

of the primary electrons, the cathodic conductance current also increases. As has been shown in earlier work of the authors, in the case of cadmium-selenide single crystals a linear dependence is observed between the cathodic conductance current and the primary current. Thin layers of cadmium selenide also show a greater inertia than single crystals. This difference between the behaviour of thin layers and of single crystals is attributed to the differing conditions of recombination.

[Abstracter's note: this is an abridged translation.]
There are 1 figure and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Kishinevskiy gosuniversitet
(Kishinev State University)

SUBMITTED: July 15, 1960

Card 3/43

9.2300 (1001, 1385)

30176
S/139/61/000/005/014/014
E073/E335

28.253 ✓
AUTHORS: Kot, M.V. and Simashkevich, A.V.

TITLE: Cathodic conductance of thin layers of cadmium selenide

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, no. 5, 1961, pp. 169 - 170

TEXT: The authors give results on the transverse cathodic conductance of layers of cadmium selenide under the effect of bombardment with electrons of energies up to 3.5 keV. The specimens were produced by evaporating polycrystalline cadmium selenide on a glass base, heated to 250 °C. Terminal contacts were produced by vacuum deposition of indium electrodes spaced 2 mm apart. The circuit and technique used were described in earlier work (Ref. 6 - Uch.zap.KGU, 29, 201, 1957). The resistance of the specimens was of the order of $10^9 \Omega$. After being placed into the metering tube and evacuated to 10^{-5} mm Hg, the resistance of the layers decreased by a factor of 2. Electron bombardment produced two phenomena: 1) the resistance of the thin layers decreased suddenly by two to three orders of

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